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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/812,157	03/19/2001	Eugene P. Marsh	150.00930102	2941

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EXAMINER

MALDONADO, JULIO J

ART UNIT PAPER NUMBER

2823

DATE MAILED: 06/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/812,157

Applicant(s)

MARSH, EUGENE P.

Examiner

Julio J. Maldonado

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 58-105 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 58-105 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 59, 60, 67, 68, 74, 85, 86, 94, 95, 103 and 104 rejected under 35

U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In reference to claims 59, 67, 85, 94 and 103, the applicant claims the conductive metal layer having a thickness of 600Å or less. Furthermore, in reference to claims 60, 68, 86, 95 and 104, the applicant claims the conductive metal layer having a thickness of about 500Å or less. These claims introduce new matter since the original filed specification teaches a thickness from about 200Å to 600Å, not from 0Å to 600Å (page 13, lines 4-12). In reference to claim 74, the applicant claims annealing the substrate assembly at a temperature of about 1,100°C or less. This would also add new matter which was not described, since the specification teaches annealing at a temperature of 650°C to 1,100°C, not from 0°C to 1,100°C (page 13, lines 23-29).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 58-61, 63-69, 71-74, 76, 78-80, 83-86, 88, 90-96 and 98-105 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishioka et al. (U.S. 5,489,548).

In reference to claims 58-61, 63-69, 71-74, 76, 78-80, 83-86, 88, 90-96 and 98-105, Nishioka et al. (Figs.1-14) in a related method to form high dielectric constant material electrodes teach the steps of providing a substrate assembly (30) including a surface; forming an electrode (42) on the at least one surface of the substrate assembly (30) comprising the steps of forming a patterned metal-containing adhesion layer (36) on the surface, resulting in at least one exposed surface region of the substrate assembly (30), said metal-containing adhesion layer (36) comprising titanium nitride and said surface region comprising silicon oxide; forming platinum on the patterned metal-containing adhesion layer (36) and the at least one exposed surface region of the substrate assembly (30), said platinum having a thickness of 200 Å; annealing the substrate assembly (30) including the patterned metal-containing adhesion layer (36) at a temperature of 600°C; removing at least a portion of the platinum from the at least one exposed surface region of the substrate assembly (30) resulting in a patterned platinum layer (42) from the at least one exposed surface region is performed prior to forming any other materials on the platinum (column 2, line 26 – column 7, line 30).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 62, 70, 77, 89 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishioka et al. ('548) in view of Huffman (U.S. 5,191,510).

In reference to claims 62, 70, 77, 89 and 97, Nishioka et al. teach annealing the substrate assembling in an atmosphere of oxygen (column 6, lines 15-23). Nishioka et al. fail to teach applying rapid thermal anneal to the substrate assembly. However, Huffman (Fig.1c) in a related method to form memory devices teaches applying a rapid thermal annealing to a platinum electrode (column 3, line 62 – column 4, line 8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply RTA to a platinum substrate as taught by Huffman in the capacitor structure of Nishioka et al., since this would improve the adhesion between the bottom electrode and the adhesion layer, providing good interface (column 1, line 63 – column 2, line 2).

7. Claims 75 and 87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishioka et al. ('548).

In reference to claims 75 and 87, Nishioka et al. substantially teach all aspects of the invention but fail to show the temperature is between about 650°C and about 1100°C. This claim is prima facie obvious without showing that the claimed range achieves unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In

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re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill of art) and In re Aller, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious).

8. Claims 81 and 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishioka et al. ('548) in view of DeOrnellas et al. (U.S. 6,127,277).

In reference to claims 81 and 82, Nishioka et al. substantially teach all aspects of the invention but fail to show removing unadhered platinum comprising rinsing the substrate assembly in a rinsing composition for a period of about 5 minutes or less, said rinsing composition comprising at least one composition selected from the group consisting of water, aqua regia, hydrochloric acid, hydrofluoric acid, hydrogen peroxide and combinations thereof. However, DeOrnellas et al. in a related method to etch semiconductor structures teach removing unadhered platinum comprising rinsing the substrate assembly in a rinsing composition comprising at least one composition selected from the group consisting of water (column 5, lines 29-44). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the rinsing solution as taught by DeOrnellas et al. in the capacitor structure of Nishioka et al., since the rinsing solution can wash away water-soluble compounds (column 5, lines 29-44).

Nishioka et al. in combination with DeOrnellas et al. fail to teach performing the rinsing step for a period of time of about 5 minutes. The selection of the claimed range is obvious because it is a matter of determining optimum process condition by routine

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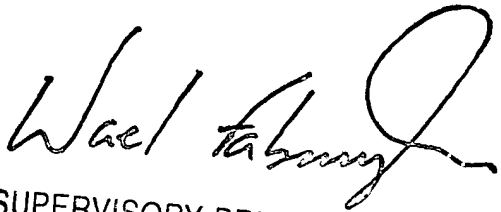
experimentation with a limited number of species. In re Jones, 162 USPQ 224 (CCPA 1955)(the selection of optimum ranges within prior art general conditions is obvious) and In re Boesch, 205 USPQ 215 (CCPA 1980)(discovery of optimum value of result effective variable in a known process is obvious).

Conclusion

9. Papers related to this application may be submitted directly to Art Unit 2823 by facsimile transmission. Papers should be faxed to Art Unit 2823 via the Art Unit 2823 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2823 Fax Center number is **(703) 305-3432**. The Art Unit 2823 Fax Center is to be used only for papers related to Art Unit 2823 applications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Julio J. Maldonado** at **(703) 306-0098** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via julio.maldonado@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on (703) 308-4918.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 2800 Receptionist** at **(703) 308-0956**.


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